

*Mesoleg* — Coxa and trochanter similar to proleg except larger. Femur weakly incrassate, similar to profemur but larger, prominently haired along inner or posterior margin; ratio of length-to-width 63:20 (32%), length 2.1 mm. Tibia similar to protibia but proportionally broader, hairier and with a conspicuous armament of reddish spines, particularly along outer edge and a loose, transverse, terminal row; ratio of length-to-width 48:8 (17%), length 2 mm. Tarsus a larger edition of protarsus.

*Metaleg* — Much larger than pro- and meso-legs, with coxa more globular. Femur long, rather flat, not truly incrassate in any sense, thinly furred along posterior or inward edge; ratio of length-to-width 96:28 (29%), length 3 mm. Tibia relatively longer version of mesotibia, spined along edges and with a conspicuous fringe of long, yellow swimming hairs along internal or posterior border; ratio of length-to-width 90:9 (10%), length 3.1 mm. Tarsus large, much elongated, at least twice the length of mesotarsus and heavily equipped with swimming hairs inwardly.

*Type Locality and Etymology:* Holotypic female, allotype and 8 paratypes (2 being winged forms) from: South India, Madras, Anamalai Hills, Kadamparai, 1963 June, P. Susai Nathan, 1050 m; 2 micropterous paratypes from Anamalai Hills, Cinchona, Nathan, 1959 April, 1050 m, under debris of stream; 1 winged paratype from Coimbatore, Nathan, 1959 February. All specimens in the

collection of the Biological Society of Nevada, Verdi, Nevada. I am pleased to name the species after its collector, who has diligently sampled the naucorid fauna of his region.

*Comparative notes:* *Aphelocheirus nathani* appears to be related to the populations east, rather than west, of India, although the continuous and constant land masses to the west would appear a more likely continuum from which it could be derived. Lacking the distinct and prominent connexival spines of the *A. aestivalis* (Fabricius) 1803 group to the west, *A. nathani* is quite close to the Philippine species described by Usinger, *A. philippinensis* 1938 and *A. uichancoi* 1938, particularly the latter, which is about the same size. From *A. uichancoi*, *A. nathani* differs in the lighter color, somewhat smaller size and much different head proportions, *uichancoi* having the anteclypeal region much more extensively developed anteriorly between the eyes. The emboliar flare is also more pronounced in *nathani* and is longer. Connexival spines are somewhat more prominent in *uichancoi*.

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### BULLETIN SO. CALIF. ACADEMY OF SCIENCES 70(2): 72-79, 1971

#### NEW SPECIES OF *POLYDORA* (POLYCHAETA: SPIONIDAE) FROM THE COAST OF CALIFORNIA

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ABSTRACT: Four new species of *Polydora* are described. All species bore into calcareous substrata and occur in California, with one ranging as far north as British Columbia.

During the years 1961-70 numerous collections of intertidal polychaetes were made along the California coast by us. Examination of these collections has resulted in the finding of four new species. These are added to the genus *Polydora* which is already well represented in California. Hartman (1969) recorded 13 species in her "Atlas of the Sedentariate Polychaetous Annelids from California."

The four new species are described herein and information is presented on their distribution and general ecology. In addition, some information is

provided on reproduction in *P. elegantissima*.

The holotypes and one set of paratypes are deposited in the Allan Hancock Foundation, University of Southern California. Additional paratypes are deposited in the United States National Museum, Washington, D.C.

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Genus *Polydora* Bosc, 1802

***Polydora convexa*, new species**

Figure 1

**Material examined:** California: Santa Barbara, August 27, 1961 (1), from shells of hermit crabs; Avila, March 3, 1962 (8, TYPE), from shell of *Pododesmus macroschisma*; Morro Bay, October 24, 1961 (4), May 18, 1963 (13), from hermit crab shells and *Pododesmus*; Cayucos, June 28, 1961 (5), August 28, 1961 (13), December 19, 1961 (4), March 3, 1962 (4), July 3, 1962 (9), from hermit crab shells, encrusting sponge, holdfast of *Macrocystis*, and *Dodecaceria* colonies; Bodega Harbor, March 3, 1970 (3), from *Pododesmus*; Bodega Bay, September 30, 1970 (6), from Bryozoa, dredged in 20 m; Eureka (Trinidad Head), June 21, 1962 (10), from *Balanus* and hermit crab shells.

**Description:** Specimens of *P. convexa* from Bodega Harbor which were relaxed prior to preservation are largest in the collections and measure up to 30 mm in length and have over 200 segments. Specimens collected from other localities are somewhat smaller, ranging in size from 4.2 mm (45 segments) up to 15 mm (160 segments). Live individuals are light tan with occasional dark pigment on anterior body segments. This pigment may be a vestige of larval pigmentation.

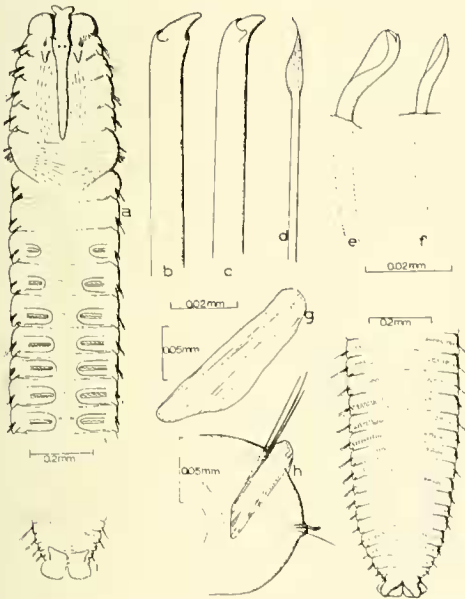


Figure 1. *Polydora convexa*, new species: a, anterior end in dorsal view; b-c, spines from setiger 5; d, pennoned companion seta from setiger 5; e, hooded hook from an anterior setiger; f, hooded hook from a posterior setiger; g, specialized notopodial structure from a posterior setiger; h, posterior setiger in anterior view with specialized notopodial structure in place; i-j, posterior segments in dorsal view.

The prostomium is bifid on its anterior margin (Fig. 1a). The caruncle extends to the posterior border of setiger 4. There is no nuchal tentacle. Eyes may be absent, but when present the four eyes are arranged in a trapezoidal manner with the posterior pair closer together and smaller than the anterior pair. The palps extend posteriorly only to setiger 10 in preserved specimens; in life they are longer and prehensile.

Setiger 1 has capillary setae in both noto- and neuropodia. Setigers 2, 3, 4, ..., 6 and succeeding setigers have well-developed notopodial lobes preceded by posteriorly directed winged capillary setae arranged in three rows; an anterior row of short curved capillary setae, a second row of longer, less curved capillary setae, and a third row of long stout capillaries. The number of these setae per notopodium rapidly diminishes until in posterior segments only a few long slender capillary notosetae remain. In the posterior one-half of the body these capillary setae are accompanied in each notopodium by an unusual setal structure which is difficult to interpret (Fig. 1g-h). These structures do not protrude through the cuticle and resemble tight bundles of setal fibers. They are undoubtedly similar to the "organes en filières" of Claparède (McIntosh, 1915) found in *Spiophanes bombyx* Claparède. The neuropodia of setigers 2, 3, 4, ..., and 6 have posteriorly directed capillary setae. Hooded hooks begin on setiger 7. They are bidentate (Fig. 1e) in anterior setigers with the secondary tooth gradually becoming smaller until it disappears entirely in posterior setigers. This results in a unidentate hook (Fig. 1f). The change-over from bidentate to unidentate is variable but usually takes place near the midbody region. In anterior setigers there are four or five hooks per neuropodium while in posterior setigers there are only 1-2 hooks. The hooks are accompanied by 1 or 2 very fine capillary setae throughout.

Setiger 5 is larger than preceding and succeeding setigers (Fig. 1a). The setae include a small bundle of dorsal geniculate setae lying anterior to a semi-circular row of alternating heavy spines (Fig. 1b-c) and smaller pennoned companion setae (Fig. 1d). The heavy spines are falcate and have a broad collar on the convex side (Fig. 1b-c). Ventral and posterior to the major spines is a small tuft of winged setae.

The slightly tapered and strap-shaped branchiae begin on setiger 8 (Fig. 1a). They are small at first and reach full size on about setiger 15. Branchiae are absent from the posterior two-thirds of the body.

The pygidium has four lobes (Fig. 1i, j). The dorsal pair are smaller than the ventral pair. The anus is located at the center of the lobes.

A structure similar in appearance to the "gizzard-like" structure previously described for *P. socialis* (Blake, 1969, 1971) was noted in *P. convexa*. It occurs at about setiger 18 on a 100 segment specimen. The structure does not appear to be as muscular or as well developed as in *P. socialis*. A similar type of structure was observed in *P. flava* by Carazzi (1893).

*Remarks:* *Polydora convexa* is unusual in having the accessory structure, in this case a flange, on the convex side of the heavy falcate spines of setiger 5. It is similar to *Polydora langerhansi* Mesnil (1896) declared *incertae sedis* by Fauvel (1927). Rioja (1925) had reported *P. langerhansi* from Madeira and later from Acapulco (Rioja, 1939, 1943). Mesnil reported no specialized notopodial setae in the posterior region, did not describe the pygidium, found no eyes, and made no mention of the unidentate hooded hooks in the posterior neuropodia. The spines of setiger 5 also resemble those of *P. armata* (Mesnil noted this for *P. langerhansi*) but members of the 2 species are not likely to be confused.

*Ecology:* *Polydora convexa* was found at Santa Barbara, Avila, Morro Bay and Cayucos in central California, and at Bodega Harbor and Trinidad Head in northern California. This species was found in many different habitats, including gastropod shells inhabited by hermit crabs. At Trinidad Head and Cayucos, *P. convexa* occurred in shells of *Tegula brunnea* with *Pagurus granosimanus*; *T. brunnea* with *P. samuelis*; *T. funebris* with *P. samuelis*; *Olivella biplicata* with *P. granosimanus*; and at Santa Barbara in shells of *O. biplicata* with *P. samuelis*. Other habitats include *Pododesmus macroschisma* shells; *Diadora aspera* shells; scrapings of rocks from surf zone; *Macrocystis pyrifera* holdfast; *Dodecaceria* colonies; and encrusting red sponges. It was found in the hermit crab habitat with a new species of *Boccardia* and was associated with *Polydora ciliata* and *B. columbiana* in nearly all of the above habitats and in several of them with *B. tricuspa*. Bryozoa dredged from 18 m off Bodega Head contained *P. convexa*, a new species of *Polydora*, described herein, and *Boccardia berkeleyorum*.

In *Pododesmus* shells at Bodega Harbor, *P. convexa* formed the branching type of burrow which is similar to that described by Evans (1969) for *P. concharum* which bores into shells of *Placopecten magellanicus* (Gmelin) in New England.

*Distribution:* California; Santa Barbara to Eureka.

***Polydora elegantissima*, new species**

Figure 2

*Material examined:* California; Tomales Bay,

March 30, 1970, intertidal from a hermit crab shell (1); Morro Bay, December 31, 1963, intertidal from shells of *Tivela stultorum* (Mawe) (8, TYPE); Malibu Beach, August 20, 1964, Subtidal in 2 m, from shells of hermit crabs (6).

*Description:* A complete specimen from Tomales Bay measures 31 mm in length, is 1 mm wide and has 170 setigerous segments. It was light tan (alive) with palps which were long and darkly pigmented along the margins of the ventral groove. There was no other body pigmentation. The specimen was first seen as it extended the long black palps from the shell of the hermit crab. The palps contracted greatly upon preservation. The holotype comes from Morro Bay, is incomplete, has 280 segments and is 44 mm long.

The prostomium is divided into two widely divergent lobes which on the Tomales Bay specimen resemble anterior horns (Fig. 2a). The caruncle extends prominently back to setiger 3 or 4 and thereafter continues as a low nuchal ridge for 30 or 40 segments; it may be indistinct on setiger 5. There are no eyes.

Setiger 1 has capillary setae in noto- and neuropodia. Setiger 2, 3, 4, ..., 6 and succeeding setigers contain spreading fascicles of winged capillary notosetae arranged in 3 rows, each row with progressively longer setae. In far posterior setigers these setae diminish in number and length. There are no specialized posterior spines. The notopodial lobes of setiger 1 are shorter and more finger-like than those of 2, 3, and 4, which are large and auriculate. The lobes of setiger 6 and following setigers are shorter and more finger-like, the length gradually diminishing in middle and posterior setigers. The neuropodial lobes of setiger 2, 3, and 4 are also ear-like, although smaller than the notolobes, and they also diminish in size posterior to setiger 6. The neuropodia of setiger 2, 3, 4, ..., 6, 7, 8, and 9 contain spreading fascicles of winged capillary setae which are arranged in 2 groups; a large dorsal fascicle and a smaller ventral group. Replacement of the winged capillary setae with bidentate hooded hooks takes place over the next few setigers. Hooded hooks begin on setigers 10, 11, or 12, but usually on 11. There are 5-7 hooks per neuropodium and only a few capillary setae. These remaining capillary setae are derived from the smaller, more ventrally situated fascicle which occurs on setigers 6, 7, 8, and 9. The capillary setae are absent about setiger 18, but are present again in the posteriormost setigers. The hooks have no constriction on the shaft and retain the same structure throughout the length of the body (Fig. 2b).

Setiger 5 is modified and larger than other

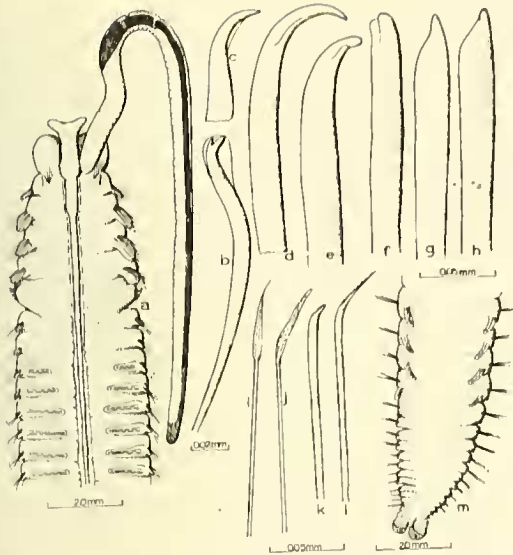


Figure 2. *Polydora elegantissima*, new species: a, anterior end in dorsal view; b, hooded hook; c-h, heavy spines from setiger 5 showing different angles and degrees of wear; i, superior dorsal seta of setiger 5; j, companion seta of setiger 5; k-l, neurosetae from setiger 5; m, posterior end in dorsal view.

setigers (Fig. 2a). The setae include a dorsal fascicle of pennoned setae (Fig. 2i) lying at the anterior end of a semicircular row of heavy modified spines (Fig. 2c-h) alternating with smaller pennoned companion setae (Fig. 2j). The deeper unworn heavy spines are sharply falcate and have a lateral sheath (Fig. 2c-d). Older worn spines are broader and more blade-like as a result of the erosion of the strongly falcate distal portion (Fig. 2g-h). Ventral to the row of heavy spines and companion setae is a neuropodial fascicle of stout geniculate setae (Fig. 2k-l). Some of these setae appear to be worn and have blunt frayed ends.

Branchiae begin on setiger 8 (occasionally 7) and continue to near the posterior end. They are relatively short and do not meet at the mid-line. The pygidium has 4 nearly equal lobes (Fig. 2m).

**Reproduction:** Egg capsules were collected with the Morro Bay specimens. Each capsule contained about 80 eggs and each egg measured about  $150\mu$  in diameter. Cleavage and larval movement were observed with non-pigmented early larvae following cleavage by about 45 hours. The culture subsequently became infected with bacteria.

**Remarks:** *Polydora elegantissima* is closely related to *P. commensalis*. It differs from them in the prostomium, caruncle, modified spines of setiger 5, and in the arrangement of the branchiae.

**Distribution and Ecology:** In Tomales Bay the

specimen was found in a shell of *Olivella biplicata* occupied by the hermit crab, *Pagurus granosimanus*. At Morro Bay it occurred in shells of *Ivella stultorum* and at Malibu Beach in shells with hermit crabs.

### *Polydora bioccipitalis*, new species

Figures 3 and 4

**Material examined:** California; Malibu Beach (22, TYPE), August 20, 1964 from hermit crabs collected by James McHenry; Santa Barbara (1), July 30, 1965 from a shell of *Olivella biplicata* occupied by a hermit crab.

**Description of the adult:** Since both adults and post-larval juveniles are present in the collections and there are some features common only to the juveniles, the 2 groups will be treated separately. Adults measure up to 18 mm in length and have about 120 segments. There is no body pigmentation.

The prostomium is deeply notched on the anterior margin (Fig. 3a). The nuchal ridge extends past setiger 5 on most specimens and is visible on many anterior segments. On a few specimens a definite caruncle reaches only to the posterior margin of setiger 2. Two nuchal tentacles are present on large well-preserved specimens (Fig. 3a). The tentacles are well developed and one precedes the other. There are 4 eyes, rounded in shape; posterior pair is more closely spaced than the anterior pair. Palps are longer than those of *Poly-*

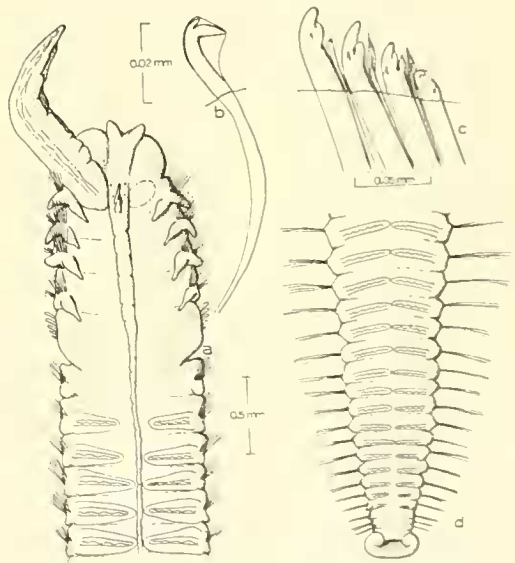


Figure 3. *Polydora bioccipitalis*, new species: a, anterior end in dorsal view; b, hooded hook; c, fascicle of heavy spines and companion setae from setiger 5; d, posterior end in dorsal view.

*dora commensalis*, but still relatively short when compared with most species of the genus. The Santa Barbara specimen was observed live and the first five setigers were narrower and showed less color (less blood) than succeeding setigers. When preserved, the anterior end contracted greatly and this combined with the shortening of the palps altered the specimen, causing it to appear fore-shortened. Setigers 1, 2, 3, 4 have well developed notopodial lobes.

Setiger 1 lacks notosetae. Setigers 2, 3, 4, 5, 6 and succeeding setigers have fascicles of winged capillary setae. These setae are arranged in 2 rows with the longer setae in the posterior row. In posterior setigers the setae consist of a bundle of long laterally directed capillaries giving that part of the body a somewhat spinous appearance (Fig. 3d).

The neuropodia of setigers 2, 3, 4, 5, 6, 7, 8 have spreading fascicles of winged capillary setae arranged in the same manner as the notosetae. Bidentate hooded hooks usually begin on setiger 9; however, on other individuals the hooks do not appear until setigers 10 to 14. Anteriorly there are 2 or 3 hooks accompanied by capillary setae. Posteriorly the hooks increase to 16 per neuropodium and the capillary setae disappear. The angle between the main fang and the secondary tooth is not great and there is only a faint suggestion of a constriction in the shaft (Fig. 3b).

Setiger 5 is larger than other setigers. The setae include a curved row of heavy spines alternating with pennoned companion setae (Fig. 3c). There is no anterior dorsal fascicle of setae and the ventral fascicle is lacking in the largest specimens, but is present in the smaller adults. The heavy spines are falcate and have 3 accessory structures. A thin line or sheath lies between the distal end of the spine and a large accessory tooth. Both the tooth and fin may be so eroded as to be unrecognizable in older setae. A third accessory structure is a small triangular shaped tooth on the side of the spine. This small tooth can be seen only when the spine is viewed at certain angles.

The broad and flattened branchiae begin on setiger 7 and continue to near the posterior end (Fig. 3a, d).

The pygidium is a single thickened disk with a dorsal gap (Fig. 3d). The Santa Barbara specimen has in addition a slight ventral notch.

*Description of the Juvenile:* Post larval juveniles present in the collections range in size from 2.5 mm to 4 mm and from 28 to 36 segments. The striking difference between these juveniles and the large adults is the retention of larval pigmentation (Fig. 4a, c). The basic pattern of this pigment is the presence of lateral rows of black spots which begin on setiger 1 and continue to near the posterior end. Setiger 5 is unpigmented. A central row of chromatophores is found on the middle segments of the body and continues to the posterior end. Scattered pigment on the dorsal surface of setiger 7 and succeeding setigers suggests that in larvae the central row of chromatophores appeared on more anterior segments. Some individuals have additional pigment spots on the peristomium and pygidium. The pygidial pigment may form 2 dark spots on either side of the dorsal gap.

The anterior margin of the prostomium is broad on the small juveniles but shows signs of a bifurcation on the larger individuals. The nuchal ridge extends into setiger 2. Only one nuchal tentacle was found in juveniles (Fig. 4a). This suggests that the development of the two nuchal tentacles may be related to the age of the specimen and the posterior growth of the nuchal ridge or caruncle. The anterior pair of eyes tend to be cup-shaped in the juveniles.

Setation patterns are similar in juveniles and adults. The hooded hooks do not exceed 7 per neuropodium. Capillary setae are retained with the hooks on a greater number of setigers.

In juveniles there are two additional setal types found among the modified spines of setiger 5 (Fig. 4b). The first is a large curved spine with no accessory structures. The second is a more slender,

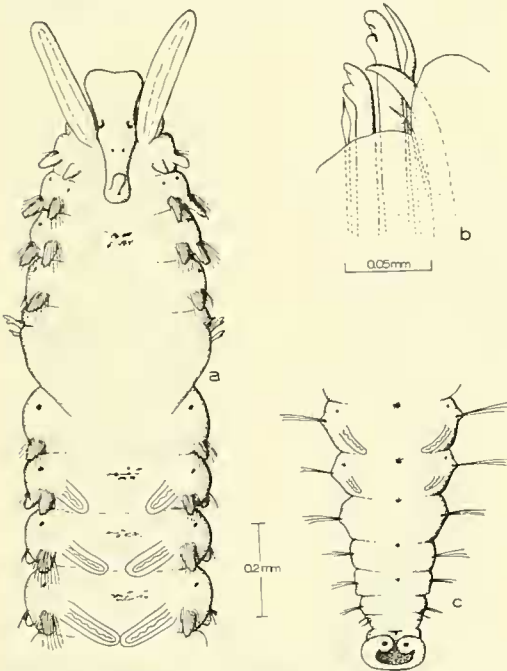


Figure 4. *Polydora bioccipitalis*, new species, juvenile: a, anterior end in dorsal view; b, group of setae from setiger 5; c, posterior end in dorsal view.

sharply hooked seta. The remaining heavy spines are as in the adults. A similar situation has been found in other polydorids (Blake, 1969) and it is suggested that the two additional setal types are hold overs from the larvae. The heavy larval setae are the first to be formed and are among the first to be worn down and replaced. Replacement is with the type of spine described for the adult. The branchiae and pygidium are as described for the adult.

*Remarks:* *Polydora bioocipitalis* is unusual in the possession of two nuchal tentacles. *Polydora maculata* (Day, 1963) is the only other species of the genus which is known to have this feature, although several species have one nuchal tentacle. *Polydora maculata* is similar to *P. bioocipitalis* in other characteristics as well, including the lack of noto-setae on setiger 1, the appearance of hooded hooks on setiger 9, and the lack of dorsal and ventral fascicles on setiger 5. The two species differ in the structure of the heavy spines of setiger 5 and the length of the nuchal ridge. The heavy spines of *maculata* have only a lateral flange whereas, *bioocipitalis* has three separate structures including two teeth and a flange.

The morphology of *P. bioocipitalis*, especially the juveniles, is similar to the description of *P. punctata* from El Salvador (Hartmann-Schröder, 1959). That species was described from juveniles which resemble those of *P. bioocipitalis* but the nuchal tentacles are not described nor figured. Further, the small lateral tooth of the specialized spines was not described.

*Distribution and Ecology:* At present, *Polydora bioocipitalis* is known only from southern California at Malibu Beach and Santa Barbara. The species was found in gastropod shells occupied by the hermit crab, *Pagurus hirsutiusculus*. The shells included *Ocenebra poulsoni*, *Olivella biplicata*, *Murex gemma* and *Polinices reclusianus* at Malibu Beach where the species was found in association with other polydorids including *P. elegantissima*, *P. commensalis*, and *Boccardia tricuspa*. At Santa Barbara *P. bioocipitalis* was found in a shell of *Olivella biplicata* occupied by *Pagurus hirsutiusculus* where it formed a shallow burrow which was covered dorsally with silt and mucous. This type of burrow is also formed by *P. commensalis* (Blake, 1969). *Polydora commensalis* is known to be a commensal of hermit crabs and since *P. bioocipitalis* has a similar habitat and burrow, it seems possible that *P. bioocipitalis* may also have a commensal relationship with hermit crabs. Other polydorids found in this habitat at Santa Barbara included *B. proboscidea*, *P. commensalis*, and *P. ciliata*.

### *Polydora pygidialis*, new species

Figure 5

*Polydora ciliata* Berkeley and Berkeley, 1936: 472-1952: 19-20 (not Johnston, 1838).

*Material examined:* California; Santa Barbara: August 27, 1961 (4), from inner harbor piling material; Avila, March 3, 1962 (3), from hermit crab shells; Morro Bay, October 24, 1961 (23), May 18, 1963 (6); Cayucos, June 28, 1961 (5), August 28, 1961 (23, TYPE), December 19, 1961 (19), July 3, 1962 (1), from hermit crab shells, keyhole limpet shell, and piling material; Bodega Bay, September 28, 1970 (10), from bryozoa, dredged from 18 m. British Columbia; Departure Bay, circa 1936 (4), from hermit crab shells (Berkeley and Berkeley, 1936).

*Description:* The individuals of this species are very slender. A specimen 9 mm long and having 100 segments is less than 0.5 mm in width. The anterior and posterior ends are slightly dusky in appearance but there is no strong body pigmentation.

The rounded prostomium (Fig. 5a) continues posteriorly as a narrow caruncle to the posterior margin of setiger 2. Palps on preserved specimens extend posteriorly to about setiger 10. Eyes may be absent but when present, the number is variable to a maximum of four. The anterior pair are widely-spaced and cup-shaped; the posterior pair are close

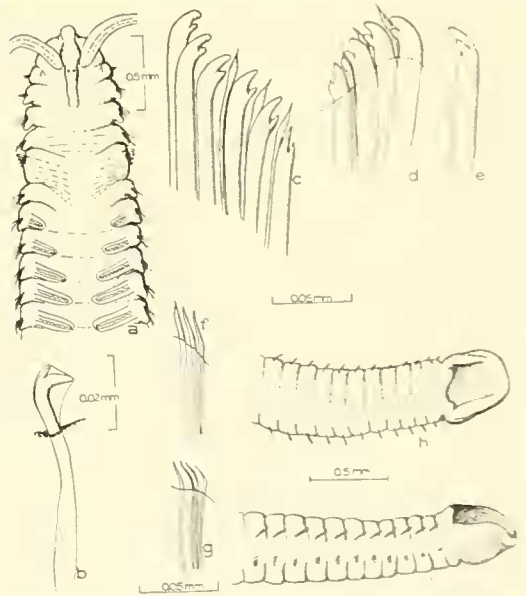


Figure 5. *Polydora pygidialis*, new species: a. anterior end in dorsal view; b. hooded hook; c-d. fascicles of heavy spines and companion setae from setiger 5; e. individual heavy spine from setiger 5; f. superior dorsal setae from setiger 5; g. neurosetae from setiger 5; h. posterior end in dorsal view; i. posterior end in lateral view.

together and irregularly shaped. In some specimens only the anterior pair are present.

Setiger 1 lacks notosetae but has a small conical notopodial lobe (Fig. 5a). The neuropodium of that setiger has a small fascicle of slender capillary setae and a bluntly rounded lobe. Setigers 2, 3, 4, ..., 6 and succeeding setigers have well developed posteriorly directed spreading fascicles of winged capillary notosetae in two rows; setae of anterior row are shorter and slightly bent. This same general setal arrangement persists throughout the length of the body. There are no specialized posterior notosetae. The neuropodia of setigers 2, 3, 4, ..., and 6 include fascicles of winged capillary setae. Bidentate hooded hooks begin on setiger 7 (Fig. 5b) and are not accompanied by capillary setae. There are four or five hooded hooks anteriorly with an increase to 10 in median setigers and a reduction to the original number posteriorly. The main fang of the hook is almost at a right angle to the shaft which has a constriction about one-half the way down its length (Fig. 5b).

The modified fifth setiger contains three groups of setae; a superior dorsal bundle of heavy, pointed setae (Fig. 5f), a curved row of large modified spines and alternating pennoned companion setae (Fig. 5c-d), and a reduced neuropodial fascicle of small, pointed setae (Fig. 5g). The heavy spines are falcate and have a large lateral accessory tooth whose apex curves back toward the main axis of the spine (Fig. 5c-d). The branchiae which begin on setiger 7 are flattened but are fingerlike in outline (Fig. 5a). They are short on anterior setigers but increase in length and nearly meet at the mid-line on about setiger 15. They are absent from the posterior one-third of the body.

In living specimens the pygidium is strongly scoop-shaped (Fig. 5h-i). Preservation may alter in part the shape of the scoop but the broad terminal end characteristic of the species remains easily identifiable.

*Remarks:* *Polydora pygidialis* is most closely related to *P. rickettsi* Woodwick (1961) from Lower California. It is distinguished from that species by the length of the caruncle, structure of the pygidium and the modified spines of setiger 5. In California, *P. pygidialis* is easily confused with *P. websteri* with which it may occur. The new species is distinguished from *P. websteri* in that the latter has a bifid prostomium, and the modified spines of setiger 5 have only an accessory flange. *Polydora pygidialis* is also similar to *Polydora limicola* Annenkova but in the latter the prostomium is vaguely incised and more importantly the palps are crossed by four or five bars of black pigment (Hartman, 1961).

*Ecology:* *Polydora pygidialis* was taken at Santa Barbara, Avila, Morro Bay and Cayucos in southern and central California. Most specimens were found in hermit crab shells, especially from the *Tegula funebris*/*Pagurus granosimanus* relationship. It was also found in piling material in the warmer waters of the inner harbor at Santa Barbara and the more open pilings in the colder waters at Cayucos. It was commonly associated with *Boccardia columbiana*. In the piling material from Cayucos it was also associated with *Polydora websteri*, a morphologically similar species. Bryozoa dredged from 18 m off Bodega Head contained *Polydora pygidialis*, *P. convexa*, and *Boccardia berkeleyorum*. *Polydora pygidialis* is a boring and/or nestling form. Egg capsules were found with the Bodega Bay material in September. The larvae are currently being studied by the first author.

*Distribution:* California (Santa Barbara) to British Columbia (Departure Bay).

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A NEW SPECIES OF *HUNTEROTREMA* (DIGENEA: CAMPULIDAE)  
FROM THE AMAZON RIVER DOLPHIN (*INIA GEOFFRENSIS*)

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ABSTRACT: A new species of *Hunterotrema* (Digenea: Campulidae) is described from the lungs of the Amazon river dolphin (*Inia geoffrensis*). It differs from the single species in this genus, *H. caballeroi*, in body size, the lack of cuticular spines, placement of genital pore, and size of cirrus sac.

During investigations on marine mammal helminths, numerous lung trematodes taken from the Amazon river dolphin (*Inia geoffrensis*) were given to me for identification by Dr. Sam Ridgway, Naval Undersea Research and Development Center, Point Mugu, California. The specimens were found to be similar to, but much larger than, *Hunterotrema caballeroi* McIntosh 1960. McIntosh (1960) described *H. caballeroi* from 3 entire worms and 2 fragments of 2 additional specimens. The type material and additional specimens were obtained on loan from the USNM Helminth Collection, Beltsville, Maryland. A comparison of those 6 specimens not designated as part of the type-series (USNM Helm. Coll. Nos. 56921, 56922) with this material indicated a similarity between these forms. Both groups differed from *H. caballeroi* sufficiently to warrant a new species description.

The worms from Dr. Ridgway had been fixed in 10% formalin, whereas, those received from Belts-

ville were in 70% ethanol. Whole mounts were stained in Semichon's carmine or celestine blue B, dehydrated in ethanol, cleared in xylene and mounted in piccolyte. Drawings were made with the aid of a drawing tube. All measurements are given in millimeters unless otherwise stated. Average measurements are presented with ranges in parentheses.

***Hunterotrema macrosoma***, new species  
Figures 1-5

Description based on measurements from 15 specimens.

**Diagnosis:** Body slender, elongate, 31 (24-36) long, with distinct forebody 3.7 (3.1-4.7), mid-body 19.6 (12.2-25.4) and hindbody 7.8 (6.0-9.8). Maximum body width 1.1 (0.74-1.46) at acetabular level, hindbody 1.0 (0.53-1.5) in region anterior testis.

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